

Attorney Docket No.: J3713(C)
Serial No.: 10/551,631
Filed: August 3, 2006
Confirmation No.: 5500

REMARKS

Claim 1 has been amended to incorporate the requirements of claim 3 and to clarify the description of the block copolymer so as to maintain consistency in the "block" nomenclature. Additionally claim 1 has been amended to specify that the molecular weight M_n of each A block of the copolymer is from 1,000 to 20,000 and the molecular weight M_n of each B block of the copolymer is from 1,000 to 30,000. See, for example, page 8, lines 9 to 13 and page 9, lines 24 to 26. Claims 2, 4 and 7 to 14 have been amended, in conformity with claim 1, to identify the claimed composition as a hair care composition. In conformity with claim 1, claim 2 has been further amended to change "polymer" to "block copolymer". New claim 17 specifies that the block copolymer further comprises divalent linker groups L and has the formula A-L-B-L-A. See, for example, page 4, lines 17 to 24. Claims 3, 5, 6, 11 and 16 have been cancelled without prejudice.

Pursuant to the referenced Office Action, claims 1, 3, 7, 9, and 15 stand rejected under 35 U.S.C. 102(b) as anticipated by Mudge et al. (WO1994/02112); claims 1-3, 7-8 and 13-14 stand rejected under 35 U.S.C. 102(b) as anticipated by Frechet et al (WO2002/28357); claims 5 and 6 stand rejected under 35 U.S.C. 103(a) over Frechet et al.; claims 1 and 4 stand rejected under 35 U.S.C. 103(a) over Papanatoniou et al.; and claims 10 and 12 stand rejected under 35 U.S.C. 103(a) over Mudge et al. These rejections are respectfully traversed.

Formulating hair styling compositions that provide desirable styling under conditions of high humidity can be problematic, as many of the conventional styling polymers can make the hair feel stiff and/or can give the hair a sticky feel. Sticky feel can be especially problematic in lower volatile organic compound (VOC) content compositions, e.g., 55% VOC content compositions compared to 80% VOC content

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compositions. Pursuant to the subject invention it was found that the incorporation into a hair treatment composition, in particular a styling composition, of an ABA block copolymer comprising A blocks that are poly(aminoalkylmethacrylate) and B blocks derived from vinyl acetate provides a composition that retains desirable styling under conditions of humidity while also imparting a soft, relatively non-sticky feel to the hair.

Mudge et al. is directed to particular emulsion polymers for use as hair fixatives. The polymers disclosed therein comprise specified amounts of polymerized residues of one or more acidic monomers, each containing one or more carboxyl groups, one or more water insoluble comonomers which, on a weight percentage, are the predominant components of the polymers and, optionally, up to 20% by weight of one or more water soluble monomers. Mudge et al. teaches that a desirable balance between water solubility of the fixative polymer and stability of the polymer-containing emulsion is achieved by providing the polymer with free carboxyl groups, a portion of which can be neutralized to promote emulsion stability. As acidic monomers that contain or make available carboxyl groups, Mudge et al. discloses acids such as acrylic acid, methacrylic acid, crotonic acid, itaconic acid, maleic acid, fumaric acid and certain alkyl half esters of maleic and fumaric acids. As insoluble comonomers, Mudge et al. discloses acrylates and methacrylates, alkyl substituted acrylamides and methacrylamides and certain vinyl esters, with vinyl acetate being among the preferred water insoluble comonomers. Aminoalkyl esters of acrylic and methacrylic acids are among the materials disclosed as optionable water soluble comonomers.

Mudge et al. does not disclose ABA block copolymers per se. While vinyl acetate and aminoalkyl esters of methacrylic acid are among the monomers that may be used in forming the Mudge et al. polymers, a fair reading of the citation does not disclose ABA block copolymers in which the A blocks are

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poly(aminoalkylmethacrylate) and the B blocks are derived from vinyl acetate as in the subject invention and in which the molecular weight M_n of each A block is from 1,000 to 20,000, and the molecular weight M_n of each B block is from 1,000 to 30,000.¹ Neither could Mudge et al. be fairly construed as teaching one skilled in the art the benefits of the subject ABA block copolymers in terms of imparting desirable high humidity hold and sensory properties.

Frechet et al. is directed to styling compositions which comprise a thermoplastic elastomer which is a block copolymer comprising a core polymer and two or more flanking polymers. Suitable monomers from which the core and flanking polymers can be derived are said to include vinylic monomers such as those based on acrylate/methacrylate, acrylamide and/or styrenic systems. At pages 14 to 18, Frechet et al. discloses a variety of monomers from which its block copolymers may be derived. Included among the listed monomers are N,N-dimethylaminoethyl methacrylate and vinyl acetate. Given the numerous monomers listed by Frechet et al., many thousands of possible core/flanking polymer combinations are possible. However, none of the polymers exemplified by Frechet et al. employs either a B block derived from vinyl acetate or A blocks derived from aminoalkylmethacrylate as in the subject invention. Consistent with the citation's preferred embodiment, the polymers set forth in the Frechet et al. examples have poly(N,N-dimethylacrylamide) flanking blocks and a poly (2-methoxyethyl)acrylate) core.² It is respectfully submitted that selection of the subject ABA polymers as styling ingredients that provide a combination of high humidity hold and desirable sensory properties is not obvious to one skilled in the art reading Frechet et al.

¹ Regarding molecular weight of copolymer blocks, the opposition brief filed by Henkel in the corresponding EP application provides a calculation of the molecular weight of the A and B blocks of the Example 9 of DE2558928. Without commenting on the correctness of the calculation, it is noted that Henkel reports that in the Example 9 polymer, the A blocks ((2-dimethylaminoethylmethacrylate)) have a molecular weight M_n of 8,600 each and that the B blocks (poly(butylacrylate)) have a molecular weight M_n of 17,200. Example 9 is not, however, an ABA block copolymer with B blocks derived from vinyl acetate as required by the subject claims.

² It should be noted that acrylamide is structurally different than aminoalkyl methacrylate. See, for example, the attached printouts from the NIH database for N,N-dimethylacrylamide and N,N-dimethylaminoacrylate.

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Papanatoniou et al. is directed to a hair lacquer that includes a fixative polymer than can be a bi- or tri- sequenced copolymer of the formula:

AAA-BBB

AAA-BBB-AAA or


BBB-AAA-BBB

Monomers usefully in the production of the A sequences include aminoalkylmethacrylates. Representative monomers useful in formation of sequence B are said to include styrene, 4-methyl styrene, 2-vinyl pyridine, 2-vinyl pyridine hydrochloride, 2-vinyl pyridinelactate, 4-vinyl pyridine, 4-vinyl pyridine hydrochloride, 4-vinyl pyridine lactate, p-dimethylamino styrene, p-dimethylamino styrene hydrochloride, p-dimethylamino styrene lactate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, hexyl methacrylate, octyl methacrylate, lauryl methacrylate, stearyl methacrylate, methacrylonitrile, 2-vinylfuran, and n-methyl-N-lauryl methacrylamide. ABA copolymers as described by the subject claims are not, however, disclosed or suggested.

In view of the foregoing comments and remarks, reconsideration and allowance of the subject claims as hereby amended is respectfully requested.

If a telephone conversation would be of assistance in advancing the prosecution of the present application, applicants' undersigned attorney invites the Examiner to telephone at the number provided.

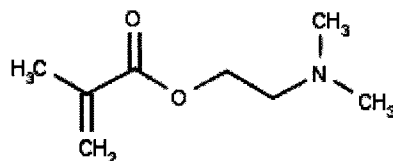
Respectfully submitted,


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RN: 2867-47-2

Molecular Formula

C8-H15-N-O2

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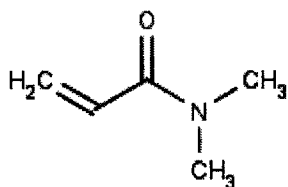


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Formulas

N,N-Dimethylacrylamide RN: 2680-03-7



Molecular Formula

C5-H9-N-O

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